

REMARKS

The Examiner has subjected this application to restriction under 35 U.S.C. 121. The Examiner has formed five groups of claims, Group I drawn to a composition, films and articles; Group II drawn to multilayered articles; Group III drawn to methods of blending; Group IV drawn to methods of making films and Group V drawn to methods of making multilayered articles. The Examiner has asserted that these groups of claims represent distinct inventions and may properly be restricted. Applicant has provisionally elected claim Group I directed to claims 1-18 and 24-26 for examination with traverse. Reconsideration of the election requirement is requested. The Examiner has made no showing that the inventions of groups one through five are distinct other than the unsupported conclusions set forth in the office action. Applicant respectfully asserts that the claims are linked together to form a single inventive concept. Further, once the composition, film and article claims of Group I are found to be patentable, the article and method claims of Groups II through Group V must be per se patentable. For these reasons it is respectfully requested that the restriction requirement be rescinded. Applicant also urges that since the article and method claims of Groups II through Group V contain all of the limitations of the composition claims, these should be rejoined under *In Re Ochiai* 37 USPQ2d 1127 and *In re Brouwer* 37 USPQ 1663.

The examiner has rejected claim 14 under 35 U.S.C. 112, second paragraph, as being indefinite for using the phrase "reaction product". It is respectfully submitted that the rejection is not well taken. The term "reaction product" in its ordinary meaning connotes the result which is obtained when at least two reagents react with one another. Applicant respectfully submits that the phrase "reaction product" is commonly accepted by the United States Patent and Trademark Office as definite claim language. Applicant respectfully points out that the phrase is currently present in claim language in nearly 22,000 U.S. patents according to the USPTO website. Accordingly, it is submitted that the claim is definite and the rejection should be withdrawn.

The examiner has rejected claims 1-4, 6-9, 13, 15-17, 24 and 26 under 35 U.S.C. 102(a) over Tai et al. (EPO 1033080 A2). It is respectfully submitted that the rejection has been overcome by the instant amendment.

The claims 1 et seq. as amended are drawn to an oxygen-scavenging polymer composition consisting essentially of:

- a) at least one ethylene vinyl alcohol copolymer;
- b) at least one epoxy or anhydride functional polybutadiene; and
- c) at least one metal salt catalyst.

Tai et al. teaches an oxygen absorptive resin composition comprising a combination of a thermoplastic resin which may be a copolymer of an aromatic vinyl compound and a diene compound, a gas barrier resin which may be an ethylene vinyl alcohol (EVOH) and a metal salt catalyst. However, Tai et al. fails to teach a composition including a functional polydiene, or more particularly an *epoxy or anhydride functional polybutadiene*.

Applicant describes, for example, an oxidizable polydiene that comprises an anhydride functionality as one which is reactive with the hydroxyl pendant groups on an ethylene vinyl alcohol copolymer. Again, such functional polybutadienes are not disclosed by Tai et al. Rather, the reference discloses non-functional diene compounds used for synthesis of the thermoplastic resin including isoprene, butadiene, 2-ethyl butadiene, and 2-butyl butadiene. Accordingly, it is respectfully asserted that the applied reference does not anticipate the amended claims. It is therefore submitted that the rejection has been overcome and should be withdrawn.

The examiner has rejected claim 5 under 35 U.S.C. 103(a) over Tai et al. in view of Japanese abstract JP 10287871. It is respectfully submitted that the rejection has been overcome by the instant amendment.

The arguments with respect to Tai et al. apply equally herein. Epoxy or anhydride functional polybutadienes are not disclosed by Tai et al. The Examiner states that JP 10287871 is being applied in order to show an oxygen-scavenging composition further including a clay. However, claim 5 relates to a composition of the invention wherein the oxidizable polydiene comprises particles whose average particle size is in the range of from about 10 nm to about 5000 nm, and which particles are substantially uniformly distributed in the polymer composition. Claim 5 does not require the presence of a clay. Regardless, Applicant respectfully asserts that JP 10287871 does not overcome the deficiencies in Tai et al. as compared to the amended claims. Particularly, neither Tai et al. nor JP 10287871, either alone or in combination, teach or suggest an oxygen-scavenging polymer composition including an epoxy or anhydride functional polybutadiene. For these reasons, it is submitted that the rejection has been overcome.

The examiner has rejected claim 10 under 35 U.S.C. 103(a) over Tai et al. in view of applicant's discussion of retortable EVOH at page 3, lines 27+ of the specification. It is respectfully submitted that the rejection has been overcome by the instant amendment. The arguments with regard to Tai et al. are repeated from above. Applicant makes no admission on page 3, lines 27+ of the specification. While retorting may be known in the art, there is simply nothing in Tai et al. combined with Applicant's disclosure of retortable EVOH in page 3 to teach or suggest an oxygen-scavenging polymer composition that consists essentially of at least one ethylene vinyl alcohol copolymer, at least one epoxy or anhydride functional polybutadiene and at least one metal salt catalyst. For these reasons it is submitted that the rejection has been overcome by the instant amendment.

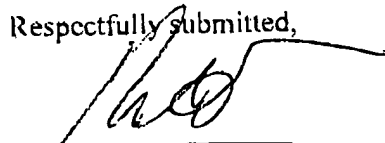
The examiner has rejected claims 11, 12, 18 and 25 under 35 U.S.C. 103(a) over Tai et al. in view of Spcer et al (U.S. patent 5,942,297). It is respectfully submitted that the rejection has been overcome by the instant amendment. The arguments with regard to Tai et al. are repeated from above. Spcer et al. has been applied to show the use of base

catalysts. Applicant respectfully asserts that there is simply nothing in the combined references that teach or suggest an oxygen-scavenging polymer composition that consists essentially of at least one ethylene vinyl alcohol copolymer, at least one epoxy or anhydride functional polybutadiene and at least one metal salt catalyst. It is therefore requested that the rejection be withdrawn.

The examiner's attention is drawn to WO 01/83318 (not applied, of record), examples 18-21 wherein a blend of a nylon, EVOH, metal salt catalyst, and an epoxy functional polybutadiene is formed. The consisting essentially of language of claims 1, et seq. is submitted to exclude such a nylon containing composition.

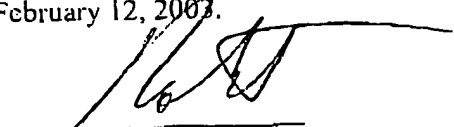
The undersigned respectfully requests re-examination of this application and believes it is now in condition for allowance. Such action is requested. If the examiner believes there is any matter which prevents allowance of the present application, it is requested that the undersigned be contacted to arrange for an interview which may expedite prosecution.

Respectfully submitted,



Richard S. Roberts
Reg. No. 27,941
P.O. Box 484
Princeton, New Jersey 08542
(609) 921-3500
Date: February 12, 2003

I hereby certify that this paper is being facsimile transmitted to the Patent and Trademark Office (FAX No. 703-305-5436) on February 12, 2003.



Richard S. Roberts
Reg. No. 27,941

APPENDIX

MARKED-UP COPY OF THE AMENDED CLAIMS

1. (Amended) An oxygen-scavenging polymer composition [which comprises] consisting essentially of:

- a) at least one ethylene vinyl alcohol copolymer;
- b) at least one oxidizable [polydiene] epoxy or anhydride functional polybutadiene; and
- c) at least one metal salt catalyst.

4. (Amended) The composition of claim 1 wherein the oxidizable [polydiene] epoxy or anhydride functional polybutadiene comprises particles which are substantially uniformly distributed in the polymer composition.

5. (Amended) The composition of claim 1 wherein the oxidizable [polydiene] epoxy or anhydride functional polybutadiene comprises particles whose average particle size is in the range of from about 10 nm to about 5000 nm. and which particles are substantially uniformly distributed in the polymer composition.

13. (Amended) The polymer composition of claim 1 wherein the composition [comprises] consists essentially of a blend of at least one ethylene vinyl alcohol copolymer, at least one oxidizable [polydiene] epoxy or anhydride functional polybutadiene, and at least one metal carboxylate salt catalyst.

14. (Amended) The polymer composition of claim 1 wherein the composition [comprises] consists essentially of a reaction product of at least one ethylene vinyl alcohol copolymer, at least one oxidizable [polydiene] epoxy or anhydride functional polybutadiene, and at least one metal carboxylate salt catalyst.

15. (Amended) An oxygen barrier film comprising a layer of a polymer composition which [comprises] consists essentially of:

- a) at least one ethylene vinyl alcohol copolymer;
- b) at least one oxidizable [polydiene] epoxy or anhydride functional polybutadiene; and
- c) at least one metal salt catalyst.

19. (Amended) A multilayer article which comprises:

- a) a polymer composition layer [comprising] consisting essentially of at least one ethylene vinyl alcohol copolymer; at least one oxidizable [polydiene] epoxy or anhydride functional polybutadiene; and at least one metal salt catalyst; and
- b) a thermoplastic polymer layer on one or both sides of the polymer composition layer.

24. (Amended) A shaped article which comprises a polymer composition [comprising] which consists essentially of:

- a) at least one ethylene vinyl alcohol copolymer;
- b) at least one oxidizable [polydiene] epoxy or anhydride functional polybutadiene; and
- c) at least one metal salt catalyst.

27. (Amended) A process for producing a polymer composition which comprises:

- a) melting at least one ethylene vinyl alcohol copolymer;
- b) blending the molten copolymer with at least one oxidizable [polydiene] epoxy or anhydride functional polybutadiene and at least one metal salt catalyst to thereby form a mixture which consists essentially of the ethylene vinyl alcohol copolymer, epoxy or anhydride functional polybutadiene and metal salt catalyst; and
- c) cooling the mixture.

29. (Amended) A process for producing an oxygen barrier film which comprises:

- a) melting at least one ethylene vinyl alcohol copolymer;
- b) blending the molten copolymer with at least one oxidizable [polydiene] epoxy or anhydride functional polybutadiene and at least one metal salt catalyst to thereby form a

mixture which consists essentially of the ethylene vinyl alcohol copolymer, epoxy or anhydride functional polybutadiene and metal salt catalyst;

- c) extruding, casting or blowing the mixture into a film; and
- d) cooling the film.

32. (Amended) A process for producing an oxygen barrier polymer film which comprises:

- a) melting a composition which [comprises] consists essentially of at least one ethylene vinyl alcohol copolymer; at least one oxidizable [polydiene] epoxy or anhydride functional polybutadiene; and at least one metal salt catalyst;
- b) extruding, casting or blowing the composition into a film; and
- c) cooling the film.

33. (Amended) A process for producing a multilayer article which comprises

- a) melting at least one ethylene vinyl alcohol copolymer; at least one oxidizable [polydiene] epoxy or anhydride functional polybutadiene; and at least one metal salt catalyst to thereby form a mixture which consists essentially of the ethylene vinyl alcohol copolymer, epoxy or anhydride functional polybutadiene and metal salt catalyst;
- b) separately melting a thermoplastic polymer composition;
- c) coextruding, casting, blowing, thermoforming, blow molding or coinjecting the mixture and thermoplastic polymer composition into a multilayer article; and
- d) cooling the article.

36. (Amended) The process of claim 33 wherein said copolymer is melted prior to blending with said oxidizable [polydiene] epoxy or anhydride functional polybutadiene.

37. (Amended) The process of claim 33 wherein said copolymer and said oxidizable [polydiene] epoxy or anhydride functional polybutadiene are melted after blending.

39. (Amended) A process for producing a multilayer article which comprises:

- a) melting at least one ethylene vinyl alcohol copolymer; at least one oxidizable [polydiene] epoxy or anhydride functional polybutadiene; and at least one metal salt catalyst to thereby

form a mixture which consists essentially of the ethylene vinyl alcohol copolymer, epoxy or anhydride functional polybutadiene and metal salt catalyst;

- b) separately melting a thermoplastic polymer composition;
- c) coinjecting molding the mixture and thermoplastic polymer composition into a multilayer preform;
- d) reheating the perform; and
- e) blow molding the perform into a multilayer article.

Please add the following claims:

41. (New) An oxygen-scavenging polymer composition which comprises:

- a) at least one ethylene vinyl alcohol copolymer;
- b) at least one oxidizable, anhydride functional polybutadiene; and
- c) at least one metal salt catalyst.

42. (New) The composition of claim 41 wherein the oxidizable, anhydride functional polybutadiene comprises particles which are substantially uniformly distributed in the polymer composition.

43. (New) The composition of claim 41 wherein the oxidizable, anhydride functional polybutadiene comprises particles whose average particle size is in the range of from about 10 nm to about 5000 nm, and which particles are substantially uniformly distributed in the polymer composition.

44. (New) The composition of claim 41 further comprising a base catalyst.

45. (New) The composition of claim 41 further comprising a clay.

46. (New) The composition of claim 41 wherein the composition comprises a blend of at least one ethylene vinyl alcohol copolymer, at least one oxidizable, anhydride functional polybutadiene and at least one metal carboxylate salt catalyst.



47. (New) The composition of claim 41 wherein the composition comprises a reaction product of at least one ethylene vinyl alcohol copolymer, at least one oxidizable, anhydride functional polybutadiene and at least one metal carboxylate salt catalyst.

48. (New) An oxygen barrier film comprising a layer of a polymer composition of claim 41.

49. (New) A multilayer article which comprises the polymer composition of claim 41.

50. (New) A shaped article which comprises the polymer composition of claim 41.

Cancel claims 2 and 3.

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In re the application of:

Mingliang L. Tsai

Docket: H0001805 (4300)

Serial Number: 09/800,749

Group Art Unit: 1772

Filed: March 7, 2001

Examiner: Sandra M. Nolan

For: OXYGEN SCAVENGING POLYMER COMPOSITIONS CONTAINING
ETHYLENE VINYL ALCOHOL COPOLYMERS**FAX COVER SHEET**TO: Commissioner for Patents
Washington, D.C. 20231

FAX NO.: 703-305-5436

FROM: Richard S. Roberts
Reg. No. 27941
P.O. Box 484
Princeton, New Jersey 08542
(609) 921-3500

DATE: February 12, 2003

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